16. (Original) The method as recited in Claim 9 wherein forming an indium doped dielectric layer includes forming an indium doped dielectric layer using a physical vapor deposition process employing a target that comprises silicon dioxide and indium.

17. (Original) The method as recited in Claim 9 wherein forming an indium doped dielectric layer includes forming an indium doped dielectric layer using a pressure ranging from about 4 mTorr to about 8 mTorr, using a radio frequency (RF) power ranging from about 50 watts to about 550 watts and using a gas flow rate ranging from about 10 ccm to about 35 ccm.

REMARKS/ARGUMENTS

The Applicants have carefully considered this application in connection with the Examiner's Action and respectfully request reconsideration of this application in view of the following remarks.

The Applicants originally submitted Claims 1-20 in the application. In a previous response to an Election Requirement, the Applicants elected to pursue Claims 9-17 and canceled Claims 1-8, 13 and 18-20. In a previous response to an Examiner's Action, the Applicants canceled Claim 14. Presently, no claims have been amended, canceled nor added by the Applicants. Accordingly, Claims 9-12 and 15-17 are currently pending in the application.

I. Rejection of Claims 9, 11, and 12 under 35 U.S.C. §103

The Examiner has rejected Claims 9, 11 and 12 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,195,191 to Osenbach, et al. (Osenbach) in view of United States

Patent No. 6,200,826 to Kim (Kim). Independent Claim 9 currently includes the element of forming an indium doped dielectric layer over at least a portion of an active region, wherein the indium doped dielectric layer has an indium concentration ranging from about 1 mole weight percent to about 15 mole weight percent. The combination fails to teach or suggest this element.

Osenbach is directed to optical devices using non-concentric crystals, such as lithium niobate, having improved temperature stability as compared to conventional devices using non-concentric crystals. (Abstract) Osenbach teaches that a buffer layer 13 including indium or comprising an indium oxide may be positioned between the waveguide 15 and the electrodes 11 to prevent light traveling through the waveguide 15 from being adsorbed by the electrodes 11. As the Examiner agrees, however, Osenbach fails to teach or suggest that the indium doped dielectric layer is located over at least a portion of an active region.

In contrast to Osenbach, Kim is directed to a reverse mesa ridge waveguide type laser diode. Kim teaches that its laser diode includes a compound semiconductor substrate 31 of a first conductivity type having an upper surface and a lower surface opposite the upper surface, and a buffer layer 32 of the first conductivity type, an active layer 33 and a waveguide layer 34 of a second conductivity type which are sequentially formed on the upper surface of the substrate 31. Kim, however, makes no mention of an indium doped dielectric layer located over at least a portion of the active layer.

The Examiner is incorrectly arguing that it would have been obvious to one skilled in the art to modify Osenbach by incorporating an active region beneath a waveguide layer, as taught by Kim, because the use of waveguide layers to confine active regions is well known within optical devices. One skilled in the art would not be motivated to remove the active region of Kim and place

it within the non-concentric crystal substrate of Osenbach for a number of regions. First, including the semiconductor active region of Kim within the non-concentric crystal and beneath the waveguide of Osenbach would feasiblely only have two effects. The most likely effect the active region would have on the device of Osenbach would be to negatively affect the light traveling through the waveguide 15 and thereby cause the device to be inoperable or degraded to a point of being unusable. Alternatively, the active region, which is formed of a semiconductor material, might have absolutely no effect on the non-concentric crystal substrate, and for this reason would never be used. Those skilled in the art understand the extreme costs associated with adding additional processing steps to an already existing process, and unless the additional processing steps provide an advantage, they would not be used. Accordingly, one skilled in the art would not be motivated to combine the active region from Kim into the device of Osenbach.

Second, one skilled in the art would not be motivated to combine the teachings of the two references because they are non-analogous art. While both are directed to optical devices, one is directed to a semiconductor type lazing device and the other is directed to a non-concentric crystal modulating device. The sheer difference in their purposes, as well as the materials used to form the different devices, would be enough to convince one skilled in the art that a teaching in one is not applicable for a teaching in another. Thus, again, one skilled in the art would not be motivated to combine the active region from Kim into the device of Osenbach.

Therefore, the combination of Osenbach and Kim is improper. As the combination is improper, and neither Osenbach nor Kim alone teaches or suggest all of the claimed elements, the references fail to establish a prima facie case of obviousness. Claims 9, 11 and 12 are therefore not obvious in view of Osenbach and Kim.

In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claims 9, 11 and 12 under 35 U.S.C. §103(a). The Applicants therefore respectfully request the Examiner withdraw the rejection.

II. Rejection of Claim 10 under 35 U.S.C. §103

The Examiner has rejected Claim 10 under 35 U.S.C. §103(a) as being unpatentable over Osenbach in view of Kim and further in view of United States Patent No. 6,051,884 to Papadas (Papadas). As indicated above, independent Claim 9 currently includes the element of forming an indium doped dielectric layer over at least a portion of an active region, wherein the indium doped dielectric layer has an indium concentration ranging from about 1 mole weight percent to about 15 mole weight percent. As also indicated above, the combination of Osenbach and Kim fails to teach or suggest such an element.

Similarly, Papadas fails to teach or suggest such an element. Actually, the Examiner is asserting Papadas for the sole proposition that the indium doped dielectric layer may be used as an interlevel dielectric. Notwithstanding the accuracy of the Examiner's assertion, Papadas fails to correct the deficiencies of Osenbach and Kim. Nowhere in Papadas is there a teaching or suggestion of forming an indium doped dielectric layer over at least a portion of an active region, wherein the indium doped dielectric layer has an indium concentration ranging from about 1 mole weight percent to about 15 mole weight percent. Accordingly, Papadas also fails to teach or suggest such an element.

Osenbach or Kim, individually or in combination with Papadas, fail to teach or suggest the invention recited in independent Claim 9 and its dependent claims, when considered as a whole.

Accordingly, the combination fails to establish a prima facie case of obviousness. Claim 10 is therefore not obvious in view of Osenbach, Kim and Papadas.

In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claim 10 under 35 U.S.C. §103(a). The Applicants therefore respectfully request the Examiner withdraw the rejection.

III. Rejection of Claims 15 and 16 under 35 U.S.C. §103

The Examiner has rejected Claims 15 and 16 under 35 U.S.C. §103(a) as being unpatentable over Osenbach in view of Kim and further in view of Publication No. JP2001-195789 (JP). As indicated above, independent Claim 9 currently includes the element of forming an indium doped dielectric layer over at least a portion of an active region, wherein the indium doped dielectric layer has an indium concentration ranging from about 1 mole weight percent to about 15 mole weight percent. As also indicated above, the combination of Osenbach and Kim fails to teach or suggest such an element.

Similarly, JP fails to teach or suggest such an element. Actually, the Examiner is asserting JP for the sole proposition that the indium doped dielectric layer may be formed using a PVD process with a target comprising silicon dioxide and indium. First, the Examiner is required to provide a translation of enough of a portion of JP such that the Applicants may determine if JP actually teaches what the Examiner believes. Presently, the Examiner has not done so.

Second, notwithstanding the accuracy of the Examiner's assertion, JP fails to correct the deficiencies of Osenbach and Kim. Nowhere in JP is there a teaching or suggestion of forming an indium doped dielectric layer over at least a portion of an active region, wherein the indium doped

dielectric layer has an indium concentration ranging from about 1 mole weight percent to about 15 mole weight percent. Accordingly, JP also fails to teach or suggest such an element.

Osenbach and Kim, individually or in combination with JP, fail to teach or suggest the invention recited in independent Claim 9 and its dependent claims, when considered as a whole. Accordingly, the combination fails to establish a prima facie case of obviousness. Claims 15 and 16 are therefore not obvious in view of Osenbach, Kim and JP.

In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claims 15 and 16 under 35 U.S.C. §103(a). The Applicants therefore respectfully request the Examiner withdraw the rejection.

IV. Rejection of Claim 17 under 35 U.S.C. §103

The Examiner has rejected Claim 17 under 35 U.S.C. §103(a) as being unpatentable over Osenbach in view of Kim and further in view of United States Patent No. 5,397,920 to Tran (Tran). As indicated above, independent Claim 9 currently includes the element of forming an indium doped dielectric layer over at least a portion of an active region, wherein the indium doped dielectric layer has an indium concentration ranging from about 1 mole weight percent to about 15 mole weight percent. As also indicated above, the combination of Osenbach and Kim fails to teach or suggest such an element.

Similarly, Tran fails to teach or suggest such an element. Actually, the Examiner is asserting Tran for the sole proposition that certain specific processing conditions (e.g., pressure, radio frequency, and gas flow rate, etc.) may be used to form the indium doped dielectric layer. Notwithstanding the accuracy of the Examiner's assertion, Tran fails to correct the deficiencies of

Osenbach and Kim. Nowhere in Tran is there a teaching or suggestion of forming an indium doped dielectric layer over at least a portion of an active region, wherein the indium doped dielectric layer has an indium concentration ranging from about 1 mole weight percent to about 15 mole weight percent. Accordingly, Tran also fails to teach or suggest such an element.

Osenbach and Kim, individually or in combination with Tran, fail to teach or suggest the invention recited in independent Claim 9 and its dependent claims, when considered as a whole. Accordingly, the combination fails to establish a prima facie case of obviousness. Claim 17 is therefore not obvious in view of the references.

In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claim 17 under 35 U.S.C. §103(a). The Applicants therefore respectfully request the Examiner withdraw the rejection.

V. Conclusion

In view of the foregoing remarks, the Applicants now see all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 9-12 and 15-17.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application.

Respectfully submitted,

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